Attorney Docket No.010548

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IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method for recovering data transmitted in a wireless communication system, wherein the wireless communication system comprises a plurality of receive antennas, comprising:

receiving at least one data stream, wherein each data stream comprises a plurality of modulation symbols for a plurality of transmitted coded bits;

wherein the plurality of modulation symbols for each receive antenna can be a respective modulation or coding scheme;

determining for each data stream a ~~first~~ plurality of soft decision symbols ~~for a first subset of the transmitted coded bits~~ based on the received plurality of modulation symbols and ~~first extrinsic information~~ a first *a priori* information for the transmitted coded bits;

determining ~~the first extrinsic information~~ a second *a priori* information based on the ~~first~~ plurality of soft decision symbols and the first *a priori* information for the transmitted coded bits;

determining the first *a priori* information for the transmitted coded bits based in part on the second *a priori* information;

repeating the determining the [a] ~~first~~ plurality of soft decision symbols and the determining the first ~~extrinsic information~~ *a priori* information a plurality of times;

determining decoded bits for the ~~first subset of~~ transmitted coded bits based on the second *a priori* information ~~first extrinsic information~~;

~~determining a second plurality of soft decision symbols for a second subset of the plurality of transmitted coded bits based on the received plurality of modulation symbols and second extrinsic information for the second subset of the plurality of transmitted coded bits;~~

~~determining the second extrinsic information based on the second plurality of soft decision symbols and wherein the second extrinsic information is independent of the first extrinsic information;~~

~~repeating the determining a second plurality of soft decision symbols and the determining the second extrinsic information a plurality of times; and~~

~~determining decoded bits for the second subset of the plurality of transmitted coded bits based on the second extrinsic information.~~

2. (Currently Amended) The method of claim 1, further comprising:

deriving the first *a priori* information for the ~~first subset of~~ transmitted coded bits ~~the plurality of the transmitted coded bits~~ based on ~~the received modulation symbols and~~ a [the] first extrinsic information, deriving the first extrinsic information based on the second *a priori* information and a *a posteriori* information, deriving the second *a priori* information based on a second extrinsic information for the transmitted coded bits, and deriving the second extrinsic information based on the plurality of soft decision symbols and the first *a priori* information for the transmitted coded bits ~~and wherein the first plurality of soft decision symbols is determined based on the first *a priori* information and the first extrinsic information.~~

3. (Previously Presented) The method of claim 1, wherein the soft-decision symbols are represented as log-likelihood ratios (LLRs).

4. (Previously Presented) The method of claim 1, wherein the soft-decision symbols comprise channel information.

5. (Previously Presented) The method of claim 1, wherein the soft-decision symbols comprise information for one or more spatial subchannels and one or more frequency subchannels used to transmit the plurality of modulation symbols.

6. (Currently Amended) The method of claim [1] 2, further comprising:

deinterleaving the ~~soft decision symbols~~ the second extrinsic information, wherein the deinterleaved second extrinsic information ~~soft decision symbols~~ is decoded; and

interleaving the first extrinsic information, wherein the interleaved first extrinsic information is used to derive the soft decision symbols.

7. (Original) The method of claim 1, wherein the wireless communication system is a multiple-input multiple-output (MIMO) system.

8. (Original) The method of claim 7, wherein the MIMO system implements orthogonal frequency division multiplexing (OFDM).

9. (Cancelled)

10. (Currently Amended) The method of claim 1, further comprising:

recovering a first subset of the modulation symbols for a first transmit antenna by nulling a ~~second subset~~ other subsets of the modulation symbols for a ~~second~~ other transmit antennas.

11. (Previously Presented) The method of claim 10, wherein the recovering the first subset of the modulation symbols for the first transmit antenna includes

pre-multiplying the received modulation symbols with a plurality of nulling matrices to derive the first subset of the recovered modulation symbols for a plurality of frequency subchannels of the first transmit antenna.

12. (Currently Amended) The method of claim 1, further comprising:

recovering a [the] first subset of the modulation symbols for a [the] first transmit antenna by nulling the modulation symbols for [the] a other ~~second~~ transmit antennas from the received modulation symbols, and

canceling interference due to the recovered modulation symbols from the received modulation symbols, thereby producing interference-cancelled modulation symbols, and

recovering [the] a other ~~second~~ subsets of the modulation symbols from the interference-cancelled modulation symbols.

13. (Previously Presented) The method of claim 1, further comprising:

deriving pre-decoding interference estimates based on the soft-decision symbols; and

canceling the pre-decoding interference estimates from input modulation symbols, and

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wherein the input modulation symbols for a first transmit antenna are the received modulation symbols and the input modulation symbols for each subsequent transmit antenna are the interference-cancelled modulation symbols from the current transmit antenna.

14. (Cancelled)

15. (Cancelled)

16. (Currently Amended) The method of claim [15] 3, wherein a dual-maxima approximation is used to derive the LLRs for the coded bits.

17. (Cancelled)

18. (Previously Presented) The method of claim 1, wherein the soft-decision symbol for each coded bit comprises extrinsic information extracted from other coded bits.

19. (Previously Presented) The method of claim 1, wherein the decoding is based on a parallel concatenated convolutional decoding scheme.

20. (Previously Presented) The method of claim 1, wherein the decoding is based on a serial concatenated convolutional decoding scheme.

21. (Previously Presented) The method of claim 1, wherein the decoding is based on a convolutional decoding scheme.

22. (Previously Presented) The method of claim 1, wherein the decoding is based on a block decoding scheme.

23. (Previously Presented) The method of claim 1, wherein the decoding is based on a concatenated convolutional decoding scheme, and wherein a dual-maxima approximation is used for evaluating log-likelihood ratios (LLRs) for the decoding.

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24. (Previously Presented) The method of claim 1, wherein the decoding for each transmit antenna is based on a respective decoding scheme.

25. (Previously Presented) The method of claim 1, wherein the plurality of modulation symbols are derived based on a non-Gray modulation scheme.

26. (Previously Presented) The method of claim 1, wherein the modulation symbols for each transmit antenna are derived based on a respective modulation scheme.

27. (Currently Amended) A receiver unit in a wireless communication system, wherein the wireless communication system comprises a plurality of receive antennas, comprising:

a detector operative to receive at least one data stream, wherein each data stream comprises a plurality of modulation symbols for a plurality of transmitted coded bits, derive soft-decision symbols for the coded bits based on the received modulation symbols and ~~second~~ a first *a priori* information for the coded bits, derive the first *a priori* information for the coded bits based on a *a posteriori* information, and derive ~~first~~ a second *a priori* information for the coded bits based on the soft-decision symbols and the ~~second~~ first *a priori* information;

wherein the detector operative to receive the plurality of modulation symbols from each receive antenna with a respective modulation or coding schemes;

a ~~first~~ decoder operative to decode ~~a first subset of the first~~ the second *a priori* information to derive ~~a first subset of the second *a priori*~~ the *a posteriori* information and to determine ~~a first subset of~~ decoded bits ~~for a first subset~~ of the transmitted coded bits ~~based on the first subset of the second *a priori* information,~~; and

wherein the ~~first subset of the first~~ second *a priori* information is derived by the detector and decoded by the ~~first~~ decoder a plurality of times prior to determining the ~~first subset of the~~ decoded bits. ~~; and~~

~~a second decoder operative to decode a second subset of the first *a priori* information to derive a second subset of the second *a priori* information and to determine a second subset of decoded bits for a second subset of the transmitted coded bits based on the second subset of the second *a priori* information, and~~

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~~wherein the second subset of the first *a priori* information is derived by the detector and decoded by the second decoder a plurality of times prior to determining the second subset of the decoded bits, and~~

~~wherein the first subset of the first *a priori* information is independent from the second subset of the first *a priori* information.~~

28. (Currently Amended) The receiver unit of claim 27, further comprising:

a deinterleaver operative to deinterleave a second extrinsic information based on the soft-decision symbols and the first *a priori* information for the transmitted coded bits, ~~the first *a priori* information,~~ wherein the deinterleaved ~~first *a priori* information~~ second extrinsic information is decoded by the ~~first~~ decoder; and

an interleaver operative to interleave ~~the~~ a first extrinsic information based on the second *a priori* information and the *a posteriori* information for the transmitted coded bits,

~~second *a priori* information,~~ wherein the interleaved ~~second *a priori*~~ first extrinsic information is used by the detector to derive the soft-decision symbols.

29. (Original) The receiver unit of claim 27, wherein the soft-decision symbols represent log-likelihood ratios (LLRs) for the coded bits.

30. (Original) The receiver unit of claim 29, wherein the detector is operative to use a dual-maxima approximation to derive the LLRs for the coded bits.

31. (Currently Amended) The receiver unit of claim 27, wherein the detector is further operative to recover the modulation symbols for each transmit antenna by nulling the modulation symbols for other transmit antennas, and to derive the soft-decision symbols for the coded bits transmitted from each transmit antenna based on the recovered modulation symbols for the transmit antenna and the ~~second~~ first *a priori* information.

32. (Original) The receiver unit of claim 31, wherein the detector is further operative to pre-multiply the received modulation symbols with a plurality of nulling matrices to derive the recovered modulation symbols for the plurality of frequency subchannels of each transmit antenna.

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33. (Original) The receiver unit of claim 31, wherein the detector is further operative to cancel interference due to the recovered modulation symbols for each transmit antenna, and to recover the modulation symbols for each subsequent transmit antenna, except the last transmit antenna, based on the interference-cancelled modulation symbols.

34. (Original) The receiver unit of claim 27, wherein one decoder is provided for each independently coded data stream to be decoded by the receiver.

35. (Currently Amended) The receiver unit of claim 27, wherein at least one decoder is operative to perform concatenated convolutional decoding on the ~~first~~ second *a priori* information.

36. (Previously Presented) The receiver unit of claim 27, wherein at least one decoder implements a maximum *a posteriori* (MAP) decoding algorithm.

37. (Original) The receiver unit of claim 27, further comprising:

a channel estimator operative to estimate one or more characteristics of a communication channel via which the plurality of modulation symbols are received; and

a transmitter unit operative to process and transmit channel state information indicative of the estimated channel characteristics.

38. (Original) The receiver unit of claim 37, wherein the channel state information is indicative of a particular coding and modulation scheme to be used for each transmit antenna.

39. (Original) The receiver unit of claim 37, wherein the channel state information is indicative of a particular coding and modulation scheme to be used for all transmit antennas.

40. (Original) The receiver unit of claim 27, wherein the wireless communication system is a multiple-input multiple-output (MIMO) system that implements orthogonal frequency division multiplexing (OFDM).

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41. (Original) A terminal comprising the receiver unit of claim 27.

42. (Original) A base station comprising the receiver unit of claim 27.

43. (Original) An access point comprising the receiver unit of claim 27.

44. (Currently Amended) A receiver apparatus in a wireless communication system, wherein the wireless communication system comprises a plurality of receive antennas, comprising:

means for receiving at least one data stream, wherein each data stream comprises a plurality of modulation symbols for a plurality of coded bits transmitted via a plurality of frequency subchannels of [a] the plurality of transmit antennas, wherein the plurality of modulation symbols for each receive antenna can be a respective modulation or coding scheme;

means for deriving soft-decision symbols for the coded bits based on the received modulation symbols and ~~second~~ a first *a priori* information for the coded bits;

means for deriving ~~first~~ a second *a priori* information for the coded bits based on the soft-decision symbols and the ~~second~~ first *a priori* information;

first means for decoding ~~a first subset of the first *a priori* information~~ the second *a priori* information to derive ~~a first subset of the second~~ the first *a priori* information, wherein the ~~first subset of the first~~ second *a priori* information is derived and decoded a plurality of times;

first means for determining ~~a first subset of~~ decoded bits ~~for a first subset~~ of the transmitted coded bits based in part on the ~~second~~ first *a priori* information;

~~second means for decoding a second subset of the first *a priori* information to derive a second subset of the second *a priori* information, wherein the second subset of the first *a priori* information is derived and decoded a plurality of times; and~~

~~second means for determining a second subset of decoded bits for the second subset of the transmitted coded bits based in part on the second *a priori* information, and~~

~~wherein the first subset of the first *a priori* information is independent of the second subset of the first *a priori* information.~~

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45. (Currently Amended) The receiver apparatus of claim 44, further comprising:

means for recovering the modulation symbols for each transmit antenna by nulling the modulation symbols for other transmit antennas, and

wherein the soft-decision symbols for the coded bits transmitted from each transmit antenna are derived based on the recovered modulation symbols for the transmit antenna and the ~~second~~ first *a priori* information for the transmit antenna.

46. (Currently Amended) The receiver apparatus of claim 44, further comprising:

means for deinterleaving ~~the first *a priori* information~~ a second extrinsic information based on the soft-decision symbols and the first *a priori* information for the transmitted coded bits, wherein the deinterleaved ~~first *a priori*~~ second extrinsic information is decoded; and

means for interleaving ~~the second *a priori* information~~ a first extrinsic information based on the second *a priori* information and a *a posteriori* information for the transmitted coded bits, wherein the interleaved ~~second *a priori*~~ first extrinsic information is used to derive the soft-decision symbols.

47 – 68. (Cancelled)

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